

***Abstract of the Disclosure***

[00053] A device is disclosed that includes an interface member including a material and a manipulandum movable in a degree of freedom. The manipulandum is able to penetrate the material. A sensor is configured to output a position signal based on the position of the manipulandum. An actuator is configured to output haptic feedback by applying a compressive force to the material based on the position signal. In other embodiments, a method is disclosed that includes receiving a position signal associated with a position of a manipulandum, where at least a portion of the manipulandum penetrates the interface material. Haptic feedback is output by varying a density of the interface material based on the position signal.

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